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BULLETIN
OF THE
TORREY BOTANICAL CLUB.

Vol. XIII.] New York, August, 1886. [No. 8.

Fern Notes, IX.

With Plate LVIII.

GEO. E. DAVENPORT.

LIST OF FERNS COLLECTED ON THE MOUNTAINS NEAR THE CITY OF CHIHUAHUA, MEXICO, DURING THE SEASON OF 1885, BY C. G. PRINGLE, OF CHARLOTTE, VERMONT.

The numbers are those on Mr. Pringle's tickets, and include some not given on his distribution list. Those ferns left undetermined on his published list will be found here fully named.

Adiantum Capillus-veneris, L. Rocky hills near Chihuahua.

456—*Adiantum tricholepis*, Fée. Santa Eulalia Mt.; April. A single station, yielding only a few specimens; none for distribution.

Mr. Pringle wrote that he "travelled many miles over the steep, rocky hills of Chihuahua, searching their cliffs in vain for more. The clump was growing from black mould which had accumulated in a fissure of a cliff, about a foot wide, and was sheltered from direct access of rain and sunshine by a projection of rock near the upper part of the fissure. I never found another place just like it, but am confident there is plenty of the fern hidden amongst the cliffs which render difficult of access for a score of miles the summits of the mountains within view from the city of Chihuahua."

The fronds on these specimens of Mr. Pringle's agree perfectly with the excellent figure of this species in Ferns of North America, Prof. D. C. Eaton (Plate 59), but the rootstocks render some modification of the description necessary, as in these plants they are cæspitose and not creeping. If this is really Fée's plant, it is difficult to understand how he could have described its rootstock as being "rampant"—creeping—unless we suppose that it was inferential from imperfect material in his hands.

Mr. Baker says that Mr. Pringle's plant exactly matches the type specimen in Kew Herbarium from Liebmann, marked *A. Chilense*, Klf., var. *pilosulum;* and in Synopsis Filicum the normal form of that species, is, with others, placed under *A. Æthiopicum*, L.

444—*Asplenium Trichomanes*, L., var. REPENS, n. var. Wet ledges, rocky hills, near Chihuahua ; October.

A most interesting small fern with the habit of *Camptosorus*, the proliferous fronds reclining, rooting at the prolonged filiform apices, creeping, and forming closely appressed mats. Apparently identical with *A. heterochroum*, Kunze, but as there is nothing to show that the normal form of Kunze's plant was proliferous, ours may be accepted as a good variety, whether under that species or *Trichomanes.*

Dr. Hooker placed Kunze's plant under *A. Trichomanes* in Species Filicum, and there is apparently no good reason for otherwise disposing of Mr. Pringle's.

442—*Cheilanthes leucopoda*, Link. Ledges, Santa Eulalia Mt. ; March.

This and 457 appear to me very doubtfully distinct. They seemingly differ only in one plant being more delicate than the other. 442 has heretofore been thought to be more delicate, but in Mr. Pringle's collection it is more robust. Judging from the number of specimens it appears to have been abundant, thriving vigorously on exposed limestone ledges, while the more delicate 457 grew sparingly on cool, shaded cliffs.

The differences between the two are, on their face, exceedingly slight. Both are nearly equally glandular pubescent; the difference in the color of their stipites is no greater than in many other ferns—in 442 they are usually straw-colored, but in some plants they are quite as brown as in 457—and other differences may be readily accounted for by the character of different habitats, and varying conditions of growth. But while I am strongly inclined to consider these two ferns as merely good forms of one species, I have not made an examination thorough enough to justify so uniting them here.

468—*Cheilanthes Lindheimeri*, Hook.

449—*Cheilanthes microphylla*, Swz.

459—*Cheilanthes myriophylla*, Desv.

453, 454—*Cheilanthes tomentosa*, Link., var. *Eatoni*, Davenport, 453 being nearest to the species, which was also collected but not numbered.

445—*Cheilanthes Wrightii*, Hook.

457—*Cheilanthes viscosa*, Kaulf.

465—*Gymnogramme Ehrenbergiana*, Klotz. (G. *hispida*, Mett.)

466—*Notholæna Aschenborniana*, Klotz.

462—*Notholæna ferruginea*, Hook.

463—*Notholæna Grayi*, Davenport.

Notholæna Hookeri, D. C. Eaton. (No number.)

451—*Notholæna nivea*, Desv.

464--*Notholæna sinuata*, Kaulf.

All variously distributed about the limestone ledges. cool slopes and shaded cliffs on the rocky hills near Chihuahua; March to October.

452—*Notholæaa cretacea*, Liebmann; (*N. Californica*, D. C. Eaton; *N. candida*, Hk., var. *cretacea*, Davenport.)

The very fine series of forms of *Notholæna candida*, Hook, from Texas, recently collected by Reverchon, have quite convinced me that this fern, which has heretofore been referred to that species, should be recognized as distinct. That it is Liebmann's plant I cannot doubt. Mr. Baker assures me that it agrees perfectly with Liebmann's type in the Kew Herbarium, and an examination of a pinna from a Kew specimen sent to me by him, satisfies me that such is the case. It moreover agrees with Liebmann's original description * quite as well as most specimens do agree with their descriptions, which are often necessarily drawn up from imperfect material without sufficient allowance for natural variations within specific limits.

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* I am indebted to the kindness of Mr. Sereno Watson for looking up for me the following description :—

"*Notochlæna cretacea*, Liebm. : fronde coriacea 6 9 poll. longa, lamina 1½-2 pollices longa, 1½ poll. lata, stipite 5 7 pollicari, subrhomboidea parum acuminata obtusa bipinnato-pinnatifida, sursum decrescente pinnato-pinnatifida, demum pinnatifida, pinnis patulis oppositis sessilibus adnatis, infimis basin versus pinnato pinnatifidis sursum pinnatifidis, inæquilateris, latere exteriori imprimis basin versus superius superante, deltoideis, pollicem longis et latis, pinnulis lanceolatis obtusis alternis, laciniis suboppositis oblique ovatis obtusissimis decurrentibus, sinubus acutis curvatis ; pinnis mediis lanceolatis ceterum similibus ; pagina anteriori viridi globulis cretaceis adspersa, posteriori strato denso cretaceo flavido-albo obducta ; rhaci costisque antice leviter canaliculatis pulverulentis, postice convexis nigris; sporangiis majusculis marginalibus fuscis, sporis sphæricis nigris; stipite tereti nigerrimo nitido basin versus hic illic squamis membranaceis lanceolatis brunneis instructo.

Rhizoma subterraneum obliqvum breve cæspitosum squamis rigidis lanceolatis margine membranaceo lacero adpressis obsitum.

Our California plant differs from the Mexican only in having brown stipites and rachises instead of black, a difference of hardly more than varietal significance, if even that, and characteristic of other species in this genus, notably in *N. nivea*, where the stipites and rachises vary from dull chestnut brown to glossy black. Sometimes in Californian plants the upper surfaces of the segments appear to be more copiously sprinkled with powdery glands, but as I have only seen a few Mexican specimens, while several hundred California plants in all conditions of growth have passed through my hands, I cannot say to what extent this excess may go. The glands are clearly deciduous in both cases, and in an equal number of Mexican specimens it is probable that some would be found as thickly coated as any from California.

441—NOTHOLÆNA PRINGLEI, n. sp. (Plate LVIII.)

Rootstocks tufted, clothed with black subulate narrowly winged scales with sinuately toothed or variously incised membranous margins, those at the base of the stipites broadest; fronds 3 to 8 inches tall; stipites 1 to 4 inches long, brown, becoming grey with age, furrowed along the face and sparingly clothed with deciduous scales and white powdery glands, the scales similar to those at the base, but paler; laminæ 2 to 4 inches long, oblong or ovate lanceolate, bi- to tripinnate with obliquely ascending alternate stalked pinnæ, more or less distant, the lowermost from ½ to 1 in. long, pinnules sessile or nearly so, segments oblong or roundish, the margins strongly revolute, covering the brown sori; rachises brown, the primary rachis channelled along the face; texture subcoriaceous, both surfaces coated with white ceraceous powder.

Voxer selskabelig i Klöfter af bratte Kalkklipper over S. Lorenzo i Nærheden af Tehuacan (5400′) ; samlet i Frugt i December.

Udentvivl en af de smukkeste Arter af Slægten, og let adskillelig fra alle hidtil bekjendte."—Mexicos Bregner, F. Liebmann, Kjobenhavn, 1849, p. 64.

REMARKS.—The above description apparently calls for a taller plant than is represented by Mr. Pringle's, and most of the California specimens, but some of the latter in my possession come very near to the dimensions given, and the description given by Prof. Eaton in the Bulletin for May, 1873, from Mettenius, recognises some very much less.—G. E. D.

In crumbling lime rock, cliffs and banks of gulches, Santa Eulalia Mt., Chihuahua, Mexico. Collected by C. G. Pringle, April, 1885. Also in Parry and Palmer's collection of 1879-'80, from Coahuila and Nuevo Leon (1382, 1383), the specimens weather-beaten and nearly destitute of powder.

It was Mr. Pringle's desire that this fern be given to Dr. Edward Palmer, who, with Dr. Parry, had previously collected it, but learning that Mr. Baker had named another species in this genus (991 Parry and Palmer Coll., l. c.) for Dr. Palmer, and Dr. Parry's name being also in use, it seemed to me eminently proper to give it to one whose ample collection of perfect material so clearly established its specific value.

Mr. Pringle wrote that during most of the year the plants are as dry as the soil in which they grow, and as white as the lime debris which surrounds them. This gives to the whole plant a contracted appearance which makes the fronds seem narrower than they really are. The species stands nearest to *Notholæna nivea*, Desv., but in that fern the fronds are usually more compound, with powder only on the under side of the segments, are less coriaceous in texture, and the stipites are uniformly terete.

The wonderful tenacity with which this elegant species holds to its life-purpose through so many months of severe drouths, fitly commemorates the indomitable energy and perseverance of the excellent botanist to whom it is here dedicated.

447—*Pellæa aspera*, Baker. Rocky hills near Chihuahua; October.

448—*Pellæa cordata*, J. Sm. Under dry limestone cliffs; October.

The typical form, and very distinct from the Arizona and New Mexican plant (also collected here by Mr. Pringle) now passing under this name, but which must, in my judgment, be otherwise disposed of. The distinctive characters of the two plants will be pointed out in my remarks on the next species.

461—*Pellæa intermedia*, Mett.—at least in part—var. *pubescens*, Mett. (*P. cordata* of my catalogue and check list; *P. andromedæfolia*, Fée, var. *pubescens*, D. C. Eaton.) Near Chihuahua, Pringle. Also from New Mexico, Chas. Wright, 825 in part; Rusby, 1880; Arizona, Lemmon, 1881-'82.

Mr. Baker assures me that this and 448 are both recognized at Kew as forms of *P. cordata*, J. Sm., but thinks that they are distinct enough for two good varieties. I must confess, however, that I cannot understand why two plants so entirely distinct in every way should be retained under one specific name.

On the one hand, we have in 448 a plant with a short, stout rootstock as thick as one's finger, bearing clustered herbaceous annual fronds, the veins plainly visible; on the other hand, in 461, a plant with a long, slender, wide-creeping rootstock, bearing scattered perennial sub-coriaceous fronds, the veins obscure, and it hardly seems possible to have stronger or more valid specific characters.

The difference in texture between these two plants is much like that between *P. Breweri* and *P. Bridgesii*; or, although perhaps in a less marked degree, *P. gracilis* and *P. atropurpurea.* The difference in their rootstocks and mode of growth is essentially the same as in *Aspidium Nevadense* and *Aspidium Noveboracense*, a difference constituting almost the one character upon which *A. Nevadense* was founded. Mr. Pringle, whose thorough knowledge of plants and extremely careful observations render his views too valuable to be set aside lightly, writes very positively in regard to the distinct character and habit of these two ferns, and considers them two good species rather than mere varieties of one.

I do not make out to my entire satisfaction the *Pellœa intermedia* of Mettenius, but Kuhn's description of it in Linnæa* fits our plant very well. The type appears to have been founded on a glabrous Mexican plant, and the var. *pubescens* subsequently established as one of Chas. Wright's No. 825 from New Mexico. I have it from Mr. Baker that one of the specimens included under Chas. Wright's 825 agrees with Mr. Pringle's 461, and also with Rusby's plant from New Mexico, from which it is evident that a portion of Wright's 825 was not true *flexuosa.*

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* I give here the description of *Pellœa intermedia*, Mett., as I have transcribed it from Linnæa :—

Pellœa intermedia, Mett.—Rhizoma repens, paleis 1·2''' longis, rigidulis, rufescentibus, mox lato nigro-carinatis dense vestitum ; folia subdistantia, membranacea, glaberrima ; petiolus 4-6'' longus cum rachi strictus, pallide rubellus, teres, lævis; lamina 4-6'' longa, ovata, bipinnata ; pinnæ suboppositæ, distantes ; pinnulæ 2-3 jugae, petiolulatæ, cordato-ovato, obtusissimæ ; nervi densi subimmersi ; sori margine revoluto velati.—Mexico (Hb. Fournier).

Var. *pubescens*. Mett. Rhachi partiali pubescente. *Pellœa flexuosa*, Hook. Spec., ii., 149, partim. Nov. Mexico. (Wright 825.)

Hybrida forte inter *P. saggittatum*, Cav. et *P. flexuosam*, Klf., rhizomate paleisque cum posteriore, lamina cum priore congruens, ceterum et *P. flexuosa* rhachi laevi et pubescenti varians."—Kuhn in Linnæa, xxxvi, p. 84.

REMARKS.—The only apparent discrepancy here is in the membranaceous fronds and cordate ovate pinnules, but as the former is inconsistent with densely immersed veins, and the latter is a variable character, I consider that the description as a whole points more clearly to the plant under consideration than to any other.—G. E. D.

In the absence of more convincing evidence to the contrary, therefore, it seems best to restore Mettenius' species and refer to it this plant of Mr. Pringle's which answers to the var. *pubescens.* Specimens collected in New Mexico by Rusby and in Arizona by Lemmon, and distributed as *P. cordata* or as *P. Andromedæfolia*, var. *pubescens*, must also be so referred. The *P. cordata* of my Catalogue Supplement and Check Lists thus becomes *Pellæa intermedia*, Mett.

440—*Pellæa pulchella,* Fée. Limestone ledges, Santa Eulalia Mts.; March.

446.—*Pellæa ternifolia,* Link. Grassy summits, Santa Eulalia Mts.; November.

443—*Polypodium thysanolepis*, A. Br. Cold cliffs, rocky hills; October.

445—*Woodsia Mexicana*, Fée. Wet ledges; October.

450—*Psilotum complanatum*, Spring. Seams of rocky hills; October.

EXPLANATION OF PLATE.

1, plant. 2, a lower pinna. 3, a middle pinna. 4, an upper pinna. 5, a lobed segment with section rolled back showing sori. 6, scale from base of stipes.

The Nectary of Yucca.

By WILLIAM TRELEASE.

The curious facts connected with the pollination of the capsular Yuccas discovered by Englemann and Riley* have attracted much attention and elicited a good deal of criticism, in most cases undeserved. So far as I have observed, none of this has applied

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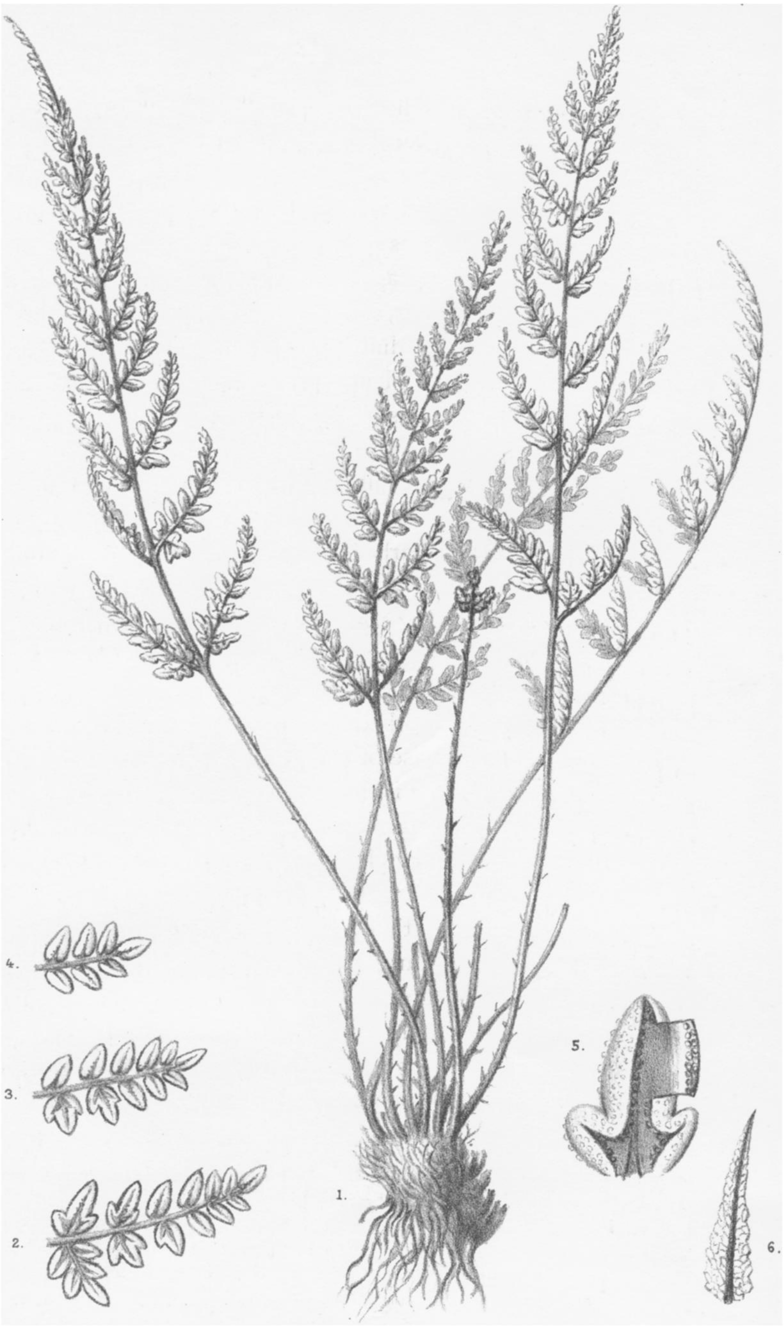
*Engelmann: BULL. TORREY BOT. CLUB, iii., 33, 37; iv., 63. Riley: Trans. St. Louis Academy, iii., 55, 178, etc.

Pl. LVIII.



C.E. Faxon, del
B. Meisel, Lith.

NOTHOLÆNA PRINGLEI, n.sp.